PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.:	10/766,753	Confirmation No.: 2267
Applicant(s):	Rivett et al.	
Filed:	01/28/2004	
Art Unit:	1711	
Examiner:	Nathan Nutter	
Title:	CYCLOOLEFINIC COPOLYMER FOR HIGH MODULUS FILM	

Docket No.: 031456/272026
Customer No.: 00826

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

October 1, 2007

DECLARATION OF DR. NATHANAEL MIRANDA UNDER 37 C.F.R. § 1.132

Sir:

I, Nathanael Miranda, hereby declare and state that:

1. I am one of the inventors of the claimed invention of the above-identified U.S. Patent Application Serial No. 10/766,753, titled "Cycloolefinic Copolymer for High Modulus Film" (hereinafter referred to as "the Application"). I am currently employed by Cryovac, Inc. the assignee of the above-identified application, and have been at all times during and following the invention described by the Application.

2. I have studied and worked in the area of polymer chemistry and in particular, plastic film research and development for more than 15 years. I obtained a Ph.D. degree in Chemical Engineering from North Carolina State University in December 1994, and a Bachelor of Science in Chemical Engineering from Stanford University in 1987. From 1994 to the present, I have

been employed with Cryovac, Inc. in the area of polymer research and development. During the past 15 years I have developed considerable knowledge and expertise with respect to polymer chemistry and related technologies. I have published numerous articles in various scientific journals in this research field, including *Journal of Plastic Film and Sheeting*; *Journal of Applied Polymer Chemistry; and Journal of Membrane Science*. I am also a coinventor in 13 U.S. patents. A list of the various publications that I have authored or have coauthored is provided in the appendix.

3. I have reviewed the Office Action dated April 3, 2007, including the basis of rejection of Claims 1 – 7 and 10 – 12 as being anticipated by, or obvious over U.S. Patent No. 4,918,133 to Moriya et al., and the basis of rejection of Claims 1, 3 – 7 and 10 – 12 as being anticipated by or, in the alternative obvious over U.S. Patent Publication No. 2002/0128392 to Zen et al. As a person having a high level of skill in the art to which these patents pertain, I believe that the Examiner's rationale for asserting that Moriya and Zen teach compositions having a haze value of less than 10 % is based on an incorrect or incomplete understanding of the teachings of these references, and is therefore incorrect.

4. It is generally known that differences in refractive indexes between polymer components results in increases in the amount of haze, and thus a reduction in the optical properties of the composition. For example, U.S. Patent No. 7,094,856 states that "[h]aze is a phenomena of light scattering and arises from local variations in the refractive index. See column 6, lines 22 – 24. In fact, according to conventional wisdom, a difference in refractive index of greater than 0.015 is considered to be large enough to result in a reduction in optical properties. For example, *Rubber Toughened and Optically Transparent Blends of Cyclic Olefin Copolymers* to Khanarian (hereinafter referred to as "Khanarian"); U.S. Patent No. 5,854,349 to Abe et al.; and EP 0995776 to Miyamoto et al., which

were previously cited by the Examiner, repeatedly teach that to obtain good optical properties, such as low haze, the polymer components must be index matched. In fact, Khanarian, Abe, Miyamato all specifically teach that to have improved optical properties (e.g., haze values) the elastomeric component and the cyclic olefin component need to be refractive index matched. For example, Miyamoto and Abe teach that the difference between refractive index for the components is at most 0.015. Further, Khanarian explicitly states "[t]he other elastomers were not index matched and so could not be used in making transparent blends." See page 2596. Table 2 of Khanarian shows that the index matched compositions described in Khanarian had a difference in refractive index of 0.004, which is well below the recited value of at least 0.03.

5. The claimed invention recites a composition comprising at least one cycloolefinic polymer and at least one non-halogenated elastomeric copolymer wherein the polymer composition exhibits a haze value of 10 % or less, and wherein the cycloolefinic polymer and the elastomeric copolymer exhibit a difference in refractive index of at least 0.03. This is a surprising and unexpected result. From the foregoing discussion, it is readily evident that one of ordinary skill, based on conventional wisdom, would expect that a composition comprising at least one cycloolefinic polymer and at least one non-halogenated elastomeric copolymer and having a difference in refractive index of at least 0.03 to have a haze value that is significantly higher than 10%. Indeed, as a person having a high level of skill in the art to which the cited art and claimed invention pertains, I was surprised that the claimed composition having polymer components with a difference in index refraction of at least 0.03 exhibited a haze value of less than 10 % Such results are quite unexpected and are contrary to the conventional wisdom.

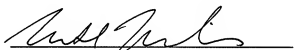
8. I also disagree with the assertions set forth in the Office Action that Moriya describes a composition having a haze value less than 10 %. A careful reading of Moriya shows that Moriya is directed to improving the impact resistance and heat resistance of the composition, and is not at all concerned with the optical properties of the composition. The optional inclusion of a filler further reinforces this conclusion. A filler is typically added to a polymer composition to modify its mechanical properties or to lower its cost. The addition of the filler would also be expected to result in a significant reduction in the optical properties of the composition due to light scattering. Accordingly, one of ordinary skill in the art would expect the composition described in Moriya to have a haze value greater than 10 %.

9. I further disagree with the Examiner's assertions that the composition in Zen would include the recited haze value. In particular, it is clear that the compositions described in Zen are opaque. Zen describes a composition comprising 5 components: (A) one or more rubber reinforced thermoplastic resins, (B) one or more acrylic resins; (C) one or more thermoplastic norbornene resins, (D) one or more styrenic resins other than (A), and (E): coloring agents as needed. Coloring agents described as component (E) provide the ability for laser light to be absorbed to conduct light energy marking (printing). Paragraph [0239] sets out examples of inorganic materials for the purpose, while paragraph [0240] sets out carbon black or black ink. As disclosed in [0241] and Table 1, the amount of Component (E) in the composition is at least 0.1 parts.

10. Based on the chemical composition and nature of components (A), (B), and (C), one of ordinary skill in the art would expect that a blend of A/B/C would be incompatible and milky, and would therefore not have a haze value less than 10 %. This is not even considering the addition of component (E). With the

addition of component (E) there can be no doubt that the composition would have a haze value significantly greater than 10 %.

11. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application of any patent issued thereon.



Nathanael Miranda Ph.D

Appendix

Publications authored by Dr. Miranda

1. Journal Publications

S.S. Sakhalkar, K.B. Walters, D.E. Hirt, N.R. Miranda, W.P. Roberts, "Surface Characterization of LLDPE Film Containing Glycerol Monostearate." *Journal of Plastic Film and Sheeting*, Vol. 18, No. 1, (2002) 33-43.

- N.R. Miranda, J.T. Willits, B.D. Freeman, H.B. Hopfenberg, "Organic Vapor Sorption and Transport in a Thermotropic Liquid Crystal Polyester." *Journal of Membrane Science*, 94 (1994) 67-83.

- A. Morisato, N.R. Miranda, J.T. Willits, G.R. Cantrell, B.D. Freeman, H.B. Hopfenberg, S. Makhija, I. Haider, M. Jaffe, "The Sensitivity of Small Molecule Sorption to Annealing in Glassy Liquid Crystalline Polymers." *Materials Research Society Symposium Proceedings*, 321 (1994) 81-86.

- A. Morisato, N.R. Miranda, B.D. Freeman, H.B. Hopfenberg, G. Costa, A. Grosso, and S. Russo, "The Influence of Chain Configuration and, in Turn, Chain Packing on the Sorption and Transport Properties of Poly(tert-butyl acetylene)." *Journal of Applied Polymer Science*, 49 (1993) 2065-2074.

- N.R. Miranda, B.D. Freeman, H.B. Hopfenberg, "The Relative Contribution of Adsorption to the Overall Sorption and Transport of Small Molecules in Amber." *Journal of Membrane Science*, 60 (1991) 147-155.